

## CLAIMS

What is claimed is:

1. A low pressure dryer for granular or powdery material, comprising:

- 5           a. a plurality of hoppers rotatable about a common vertical axis serially among material filling and heating, vacuum drying and material discharge positions;
- 10           b. a plurality of pneumatic piston-cylinder combinations for rotating said hoppers about said axis among said filling and heating, vacuum drying and discharge positions;
- 15           c. means for heating contents of a hopper at said filling and heating position;
- d. means for sealing a hopper at said vacuum drying position;
- e. means for drawing vacuum within a hopper at said vacuum drying position; and
- f. means for selectably permitting downward flow of dried granular or powdery material out of a hopper at said discharge position.

P20 2. <sup>dryer</sup> ~~Apparatus~~ of claim 1 further comprising:

- a. a vertical shaft defining said vertical axis;
- b. said pneumatic piston-cylinder combinations being equiangularly positioned about said shaft for rotating said shaft and thereby said hoppers.

*dryer*

B 3. Apparatus of claim 1 wherein said hoppers are open-ended, generally vertically oriented cylindrical configuration and equiangularly positioned respecting a vertical axis.

4. A hopper for use in a low pressure granular or powdery material dryer comprising:

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- a. a vertically-oriented cylindrical shell having open ends, adapted to be sealingly closed by selectably contacting top and bottom plates thereagainst, enabling vacuum to be drawn within said shell when said shell is at a vacuum drawing position;
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- b. a funnel within said cylindrical shell proximate the bottom thereof;
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- c. an internal material flow control plate located within said cylindrical shell beneath said funnel, pivotally connected to said cylindrical shell for movement about said connection away from a downwardly opening discharge orifice in said funnel to a position permitting downward granular resin material flow from said hopper.

*Hoppers*

B 5. Apparatus of claim 4 further comprising:

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- a. top and bottom plates for selectively sealing said cylindrical shell allowing vacuum to be drawn therein;
- b. pneumatic piston-cylinder means for urging said top and bottom plates into sealing contact with said shell; said shell being adapted to selectively dispense granular

material stored therein at a dispense position removed from said vacuum drawing position.

6. A method for continuously drying granular or powdery material preparatory to mixing, molding, extruding or other processing of that material, comprising the steps of:

a. supplying granular or powdery material to a vertically-oriented cylindrical shell at a fill and heat position and heating said material within said shell by introduction of heated air into said cylinder;

b. moving said ~~first~~ vertically-oriented cylindrical shell through an arc about a vertical axis outboard of the shell periphery to a vacuum drying position and sealing open ends of said shell thereat;

c. drawing a preselected level of vacuum within said sealed shell for time sufficient to evaporate moisture from said heated material to a desired degree of dryness;

d. moving said shell to a discharge position at which said shell is open;

e. discharging said dried material from said cylindrical shell responsively to a pneumatic piston-cylinder combination actuating a material discharge gate proximate the bottom of said shell; and

f. moving said shell through an arc about said vertical axis to a fill and heat position and sequentially repeating

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steps (a) through (d) for so long as <sup>said</sup> such granular plastic material is to be continuously dried.

7. A method for continuously supplying dried granular resin material for processing from a supply of material which is excessively moist, comprising substantially simultaneously performing the steps of:

- a. heating a portion said moist material to a selected temperature at which said moisture evaporates therefrom at a preselected level of vacuum;
- b. drawing and maintaining said preselected level of vacuum for a second portion of said material which has been heated to said selected temperature for a time sufficient to cause said moisture to evaporate therefrom and result in said second portion of material being at a preselected dryness; and
- c. supplying to granular resin material processing equipment a third portion of said material which has been dried to said preselected dryness by evaporation in said preselected level of vacuum after being heated to said selected temperature.

B 8. The method of claim 7 wherein ~~respective ones of~~ said portions are serially supplied.